



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,733	12/15/2005	Takamitsu Asanuma	126277	3716
25944	7590	12/21/2007	EXAMINER	
OLIFF & BERRIDGE, PLC			EDWARDS, LOREN C	
P.O. BOX 320850				
ALEXANDRIA, VA 22320-4850			ART UNIT	PAPER NUMBER
			3748	
			MAIL DATE	DELIVERY MODE
			12/21/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/560,733	ASANUMA, TAKAMITSU
	Examiner	Art Unit
	Loren C. Edwards	3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,4 and 9 is/are rejected.
- 7) Claim(s) 2 and 5-8 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 December 2005 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>12/15/05</u>	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 12/15/05 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 4, and 9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yamaguchi et al. (U.S. 6,922,988). Yamaguchi discloses an exhaust gas control apparatus for an internal combustion engine, comprising: an NOx storage reduction catalyst (Fig. 1, No. 20) which is provided in an exhaust passage for an internal combustion engine; a detection device (Claim 1, Lines 47-50; Fig. 1, Nos. 22 and 38; Col. 3, Lines 15-30) which detects a total concentration of sulfur oxide and hydrogen sulfide in exhaust gas that has passed through the NOx storage reduction catalyst, and a concentration of the sulfur oxide in the exhaust gas; and a poisoning recovery control device (Claim 1, Lines 42-46) which performs a poisoning recovery process that controls an operating state of the internal combustion engine such that the sulfur oxide is released from the NOx storage reduction catalyst, wherein when a concentration of the hydrogen sulfide obtained based on the total concentration and the

concentration of the sulfur oxide that are detected by the detection device during the poisoning recovery process exceeds a permissible limit (Claim 1, Lines 52-59), the poisoning recovery control device controls the operating state of the internal combustion engine such that the sulfur oxide is released from the NOx storage reduction catalyst, an amount of the released sulfur oxide is in a predetermined range, and the concentration of the hydrogen sulfide is reduced (Col. 14, Lines 11-33).

4. With regards to claim 3, Yamaguchi discloses the apparatus of claim 1, as described above, and further wherein the poisoning recovery control device controls the operating state of the internal combustion engine such that the concentration of the hydrogen sulfide is reduced, by performing at least one of a process of increasing an exhaust gas air-fuel ratio in a rich air-fuel ratio range (Col. 14, Lines 11-33), and a process of decreasing a temperature of the NOx storage reduction catalyst in a temperature range in which the sulfur oxide is released..

5. With regards to claim 4, Yamaguchi discloses the apparatus of claim 3, as described above, and further wherein the poisoning recovery control device increases the exhaust gas air-fuel ratio by performing at least one of a process of increasing an amount of intake air, a process of decreasing an EGR amount, and a process of decreasing an amount of fuel supplied to a portion upstream of the NOx storage reduction catalyst (Col. 14, Lines 11-33).

6. With regards to claim 9, Yamaguchi discloses an exhaust gas control method for an internal combustion engine, characterized by comprising: performing a poisoning recovery process (Claim 1, Lines 42-46) that controls an operating state of an internal

combustion engine such that sulfur oxide is released from a NOx storage reduction catalyst provided in an exhaust passage for the internal combustion engine, detecting a total concentration of sulfur oxide and hydrogen sulfide in exhaust gas that has passed through the NOx storage reduction catalyst during the poisoning recovery process (Claim 1, Lines 47-50; Fig. 1, Nos. 22 and 38; Col. 3, Lines 15-30); detecting a concentration of the sulfur oxide in the exhaust gas that has passed through the NOx storage reduction catalyst during the poisoning recovery process (Col. 13, Line 66 – Col. 14, Line 10); calculating a concentration of the hydrogen sulfide based on the total concentration and the concentration of the sulfur oxide that are detected (Col. 13, Line 66 – Col. 14, Line 10); and controlling at least one of exhaust gas that flows into the NOx storage reduction catalyst and a state of the NOx storage reduction catalyst such that the sulfur oxide is released from the NOx storage reduction catalyst, an amount of the released sulfur oxide is in a predetermined range, and the concentration of the hydrogen sulfide is reduced when the concentration of the hydrogen sulfide exceeds a permissible limit (Claim 1, Lines 51-59; Col. 14, Lines 11-33).

***Allowable Subject Matter***

7. Claims 2, and 5-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren C. Edwards whose telephone number is (571) 272-2756. The examiner can normally be reached on M-TH 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Loren Edwards  
(571) 272-2756

*Thomas Denion*  
THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700